REMARKS

By this amendment, claims 1-22 are pending, in which claim 4 is amended. No new

matter is introduced.

The Office Action mailed November 17, 2005 rejected claims 1-3, 11 and 13 under 35

U.S.C. § 102 as anticipated by *Richardson et al.* (US 6,633,856), and claims 4-10, 12 and 14-

22 as obvious under 35 U.S.C. § 103 based on *Richardson et al.* Additionally, claims 1-10 were

rejected under 35 U.S.C. § 101. Further, claim 4 was rejected as indefinite under 35 U.S.C. §

112, second paragraph.

In response to the indefiniteness rejection, Applicants have amended claim 4 per the

Examiner's helpful suggestion.

As for the drawing objection to FIGs. 1-5, Applicants respectfully traverse this objection.

The claimed invention is directed to the useful process of decoding, and FIGs. 1-5 provide

illustrations of certain embodiments related to the claimed process and apparatus for decoding.

Applicants make no admission in the Specification that FIGs. 1-5 show "only that which is old."

Therefore, labeling of such figures as "Prior Art" is not mandated by the patent rules.

Regarding the rejection of claims 1-10 under 35 U.S.C. § 101, Applicants respectfully

traverse the rejection for the following reasons. The USPTO Interim Guidelines for Examination

of Patent Applications for Patent Subject Matter Eligibility states the following (Emphasis

Added):

> The burden is on the USPTO to set forth a *prima facie* case of unpatentability.
> Therefore if the examiner determines that it is more likely than not that the
> claimed subject matter falls outside all of the statutory categories, **the examiner
> must provide an explanation.**
> . . .
> While abstract ideas, natural phenomena, and laws of nature are not eligible for
> patenting, methods and products **employing abstract ideas, natural
> phenomena, and laws of nature to perform a real-world function may well be.**
> In evaluating whether a claim meets the requirements of section 101, the claim
> must be considered as a whole to determine whether it is for a particular

application of an abstract idea, natural phenomenon, or law of nature, rather than for the abstract idea, natural phenomenon, or law of nature itself.

First, the Office Action provides no explanation why the claimed subject matter falls outside all of the statutory categories; Applicants submit that claims 1-10 falls squarely within the statutory category of a "useful process." The claimed subject matter provides a method for decoding a low density parity check (LDPC) coded signal. Second, the process of decoding is a "real-world function" and constitutes a "particular application of an abstract idea." Further, in *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 149 F. 3d 1375, 47 USPQ2d 1602 (Fed. Cir. 1998), the court explained (Emphasis Added):

> **The question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter** a claim is directed to -- process, machine, manufacture, or composition of matter -- [provided the subject matter falls into at least one category of statutory subject matter] **but rather on the essential characteristics of the subject matter, in particular, its practical utility.**

The process of decoding indeed has "practical utility." Based on the foregoing, Applicants respectfully request withdrawal of the § 101 rejection.

Turning now to the anticipation rejection of claims 1-3, 11 and 13, independent claim 1 recites "retrieving edge values associated with a structured parity check matrix used to generate the LDPC coded signal, **wherein the edge values specify relationship of bit nodes and check nodes, and are stored according to a predetermined scheme that permits concurrent retrieval of a set of the edge values.**" Independent claim 11 recites "memory for storing the edge values according to a predetermined scheme that permits concurrent retrieval of a set of the edge values, wherein the edge values specify relationship of bit nodes and check nodes." To satisfy these features, the Office Action, on page 5, refers to cols. 2-3 of *Richardson et al.* and provides a general discourse on the teachings of *Richardson et al.* without addressing the specific claim language. That is, the cited passage (cols. 2-3) merely

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describes the general construction of LDPC codes, their representation through the use of

graphs called bipartite/Tanner graphs, and the fact that message passing algorithms are used

for decoding of LDPC coded sequences. With respect to the graphical representation of LDPC

codes, the paragraphs simply convey the fact that bipartite/Tanner graphs comprising of

variable nodes and check nodes are used to represent LDPC codes, that variable nodes and bit

nodes are connected to each other by edges, and that these connected nodes are referred to

as being neighbors in the graph. The description fails to disclose "retrieving edge values

associated with a structured parity check matrix used to generate the LDPC coded signal,

wherein the edge values specify relationship of bit nodes and check nodes, and are

stored according to a predetermined scheme that permits concurrent retrieval of a set of

the edge values," as positively recited in the claims.

The Examiner is reminded that 35 U.S.C. § 132 requires the Director to "notify the

applicant thereof, stating the reasons for such rejection." This section is violated if the rejection

"is so uninformative that it prevents the applicant from recognizing and seeking to counter the

grounds for rejection." *Chester v. Miller*, 15 USPQ2d 1333 (Fed. Cir. 1990). This policy is

captured in the Manual of Patent Examining Procedure. For example, MPEP § 706 states that

"[t]he goal of examination is to clearly articulate any rejection early in the prosecution process

so that applicant has the opportunity to provide evidence of patentability and otherwise respond

completely at the earliest opportunity." Furthermore, MPEP § 706.02(j) indicates that: "[i]t is

important for an examiner to properly communicate the basis for a rejection so that the issues

can be identified early and the applicant can be given fair opportunity to respond."

Unfortunately, the Examiner's only discussion of the claimed features is a general, informative

passage (cols. 2-3).

As anticipation under 35 U.S.C. § 102 requires that each and every element of the claim

be disclosed in a prior art reference, based on the foregoing, it is clear that *Richardson et al.*

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fails to anticipate independent claims 1 and 11. Therefore, Applicants respectfully request withdrawal of the rejection and urge the indication that claims 1 and 11 are allowable.

In addition, claims 2-10 and 13, which depend correspondingly from allowable claims 1 and 11, are also in condition for allowance. Moreover, these dependent claims are also allowable on their own merits. For example, claim 2 specifically recites "wherein the edge values in the retrieving step are stored in memory according to the predetermined scheme, and **the predetermined scheme specifies contiguous physical memory locations for the set of edge values**." The Office Action, on page 6, refers to Figure 15 of *Richardson et al.* Figure 15 simply shows a decoder system that includes an Edge Message Memory 1506. Applicants submit that one of ordinary skill in the art cannot reasonably draw the conclusion that this memory block 1506 teaches use of "**contiguous physical memory locations for the set of edge values.**" The accompanying text of Figure 15 describes that "[t]he edge message memory 1506 and hard decision memory 1512 are vectorized versions of their counterparts 906 and 912 in decoder 900."

As another example, claim 3 recites "wherein the **memory is partitioned according to degrees of the bit nodes**." The Office Action, on page 7, asserts that Figure 15 teaches the claimed feature. However, the block 1506 provides no information on how the memory is partitioned. In apparent recognition of this, the Office Action only provides a general definition of a degree of a node – that the degree of a node is the number of edges attached to the node. The Office Action also discusses the concept of an irregular code and a regular code. It is not understood why the Examiner continues to argue in generalities, instead of addressing the specific features of the claims.

As regard the obviousness rejection of claims 4-10, 12 and 14-22, claims 4-10 and 12-18 depend from independent claims 1 and 11 are allowable at least for the arguments proffered for the allowability of these independent claims. Independent claim 19 recites "a first portion

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storing a first group of edge values associated with a structured parity check matrix used to generate the LDPC coded signal, **the first group of edges being connected to bit nodes of** n **degrees;** and a second portion storing a second group of edge values associated with the structured parity check matrix used to generate the LDPC coded signal, **the second group of edges being connected to bit nodes of greater than** n **degrees,** wherein a set of edge values from the first group or the second group is retrieved to output a decoded signal." The Examiner acknowledges that *Richardson et al.* fails to teach storing "the n edge values in a first portion and the edge values greater than n in the second portion."

Undeterred by this unfavorable factual evidence, the Examiner concludes the features are obvious, referring to Figure 4 and col. 16 to support the rejection. Figure 4 in *Richardson et al.* discloses an exemplary bipartite graph illustrating the connection between bit nodes (406) and check nodes (402) through edges (404). Messages between the bit nodes and check nodes are exchanged over these edges. The graph also explicitly discloses the various degrees of the bit nodes and check nodes, wherein the degree of a node is defined to be the number of edges connected to the node. The Examiner's statement, "edge values 406 having n nodes and edge values having greater than n nodes 408," cannot be understood. Clearly, Figure 4 illustrates that 406 are the bit nodes and not the edge values and 408 is the reference numeral used to denote the soft input bits and soft output bits. There is no support for any interpretation that is meaningful in the context of the claimed features. Faced with this fact, the Examiner had to acknowledge that the features are not explicitly taught. To the extent the Examiner is relying on Official Notice to fill in the gaps of *Richardson et al.*, pursuant to the MPEP § 2144.03, Applicants respectfully traverse the Official Notice and request the Examiner to produce references showing the claim features or withdraw the rejection as factually inadequate.

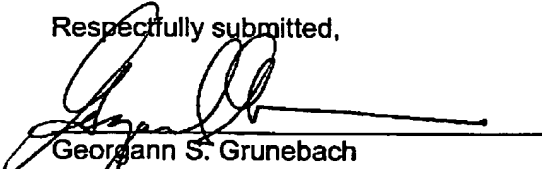In view of the above arguments, Applicants respectfully urge the indication that claims 4-10, 12 and 14-22 are allowable.

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Therefore, the present application, as amended, overcomes the rejections of record and

is in condition for allowance. Favorable consideration of this application is respectfully

requested. If any unresolved issues remain, it is respectfully requested that the Examiner

telephone the undersigned attorney at (310) 964-4615 so that such issues may be resolved as

expeditiously as possible. All correspondence should continue to be directed to our below-

listed address.

                                              Respectfully submitted,

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